BULLETIN *of The* BUSINESS HISTORICAL SOCIETY

INCORPORATED

BAKER LIBRARY, SOLDIERS FIELD, BOSTON 63, MASS.

HENRIETTA M. LARSON, *Editor*

Vol. XVIII, No. 3 June, 1944 *Whole No. 108*

SKETCH OF THE LIFE AND WORK OF MILTON PRINCE HIGGINS, 1842-1912 33
JOSEPHA M. PERRY

SCHOLARS GET ACCESS TO BURLINGTON RECORDS 54
R. C. OVERTON

A NEW BUSINESS HISTORY SERIES 56

EARLY MANUFACTURING IN OREGON 57
EVELYN H. KNOWLTON

NEW YORK CITY BUSINESS RECORDS: A PLAN FOR THEIR PRESERVATION 59
THOMAS C. COCHRAN

ANOTHER VIEW OF THE HISTORIAN'S TREATMENT OF BUSINESS 62
R. GORDON WASSON

CHARLES COPELAND—A MEMORIAL 69

SECRETARY'S COLUMN 70

Sketch of the Life and Work of Milton Prince Higgins, 1842-1912

In the days of the gilds, when a master craftsman hired half a dozen journeymen to work for him and became the capitalist of his time, one of his chief assets was skill at his trade. The industrial revolution left this petty capitalist as helpless as a museum piece so far as ownership of the tools of production was concerned, but it could not relegate to the showcase his outstanding characteristic, innate manual skill. The later age translated skill into mechanical ingenuity. Machines might turn out the finished product with an unskilled machine operator at their side, but back of the machines were mechanics with machine-wise fingers, and finally mechanical engineers with a creative sense. By means of the same ability which turned the old-time craftsmen into proprietors of production, the skilled mechanics of yesterday have evolved into industrial capitalists.

Such a man was Milton Prince Higgins; born with skill in his bones, trained to use that skill, quick to see opportunities for its application to the further improvement of productive methods, he spanned the gulf from apprentice to industrialist in his life. Firm in his philosophy that mechanical training is a sound education for living as well as for earning, he was eager to make the means of such training accessible to everyone who would make use of it. A memorial tablet at the Worcester Trade School names him "mechanic, manufacturer, educator." Each of these phases was important in his life in Worcester, Massachusetts, to which he went in 1868, without capital, to accept a salaried position. Behind this date lay an interesting background and preparation; ahead of it lay a career remarkable and yet typical of the times, in a city of diverse opportunities.[1]

---

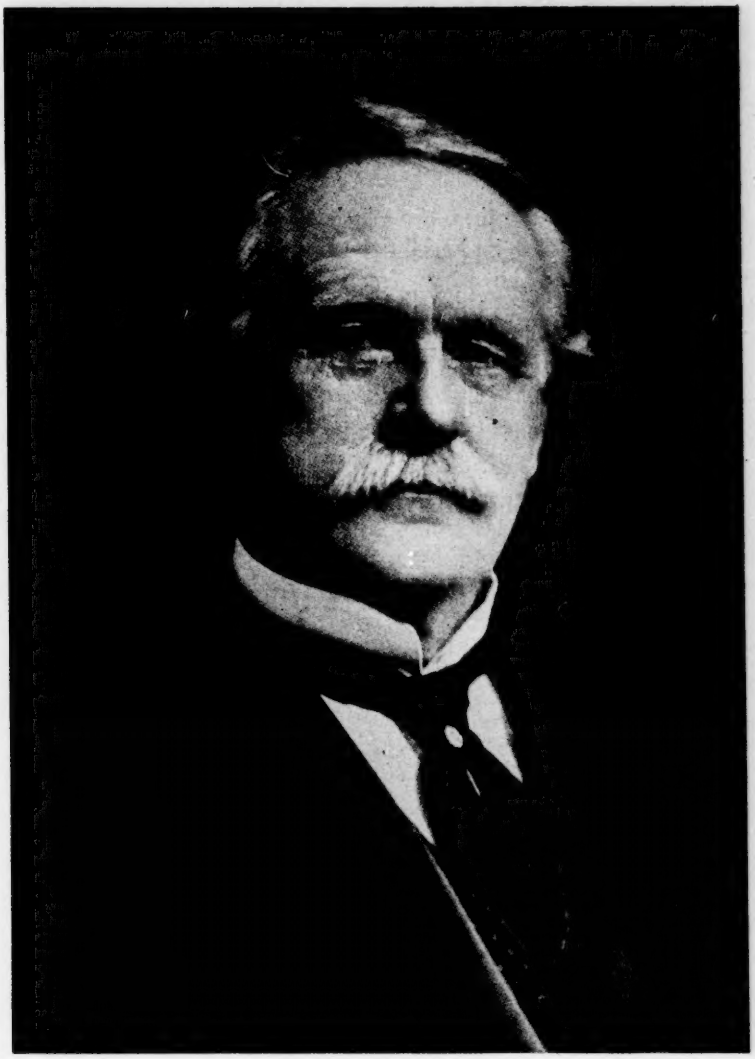
[1]Bibliographical Note: In writing about Worcester Polytechnic Institute, extensive use has been made of *Seventy Years of the Worcester Polytechnic Institute*, by Herbert Foster Taylor (Worcester, 1937). The following publications have also been referred to: Mrs. Katherine Chapin Higgins,

When, soon after the American Revolution, a sailing sloop put off from the outer rim of Cape Cod carrying nearly a hundred people to seek new homes to the northward, Timothy Higgins and his young son, Prince, were among the passengers. Skirting the Maine coast, the sloop finally rode on a favoring tide over a sandbar into the broad mouth of the Saco River. About four miles from the open sea, she met the swift water of rugged falls, and then the migrants struck out afoot to the little settlements northwest of their landing place. The Higgins family reached Standish Corner after two days' journey. Timothy Higgins with some relatives pushed out into the wilderness and began to clear land and build log houses three miles from the village.

The clearings grew and frame houses were put up as Timothy and his son and his son's son got their living from broadening farm lands, but the Higginses were more than agriculturists. It was Timothy who set up the gristmill of the neighborhood. Prince in his mature years was known as a good mechanic; he operated a cider-mill and cooper-shop and probably tinkered with the machinery of the countryside. When Prince's son, Lewis, took for his own a farm adjoining his father's, he equipped a shop with machinery to make and repair the excellent farm tools which were the envy of his neighbors. Lewis Higgins had eleven children, eight of whom were boys. Family legend pictures these sons dropping their work in the fields when parental supervision relaxed and hurrying into the shop to play or experiment in earnest until one of the younger fry, acting as sentinel, gave warning that their father was about again, and then they dashed through door

Richard Higgins . . . and his Descendants (Worcester, 1918); Charles G. Washburn, *Industrial Worcester* (Worcester, 1917); Charles Nutt, *History of Worcester and Its People* (N. Y., 1919), vol. iii; George I. Rockwood, *The Founder of the Worcester Polytechnic Institute* (Worcester, 1943); Donald Tullock, *Worcester, City of Prosperity* (Worcester, 1914); George Waldo Browne, compiler, *The Amoskeag Manufacturing Co. . . .* (Manchester, 1915); *Transactions of the American Society of Mechanical Engineers* (N. Y., 1900), vol. xxi; Worcester City Document no. 65, *Report of Trustees of Independent Industrial Schools for the Year Ending November 30, 1910;* Mass. Dept. of Education, *The Douglas Commission and the Commission on Industrial Education*, pub. 1935; *The Worcester Magazine*, 1901–1912; and publications of the Norton Company.

In the preparation of this article, assistance has been given by Mrs. Olive Higgins Prouty, Mr. Aldus C. Higgins, and especially Mr. John W. Higgins. To them, many thanks.



MILTON PRINCE HIGGINS

Mechanic, Manufacturer, Educator

"To make a good living, to have a happy family, to make preparation for hard times, to wear overalls in the shop with the same dignity as good clothes are worn on Sunday, to be confident you are laying a sure foundation for any future success, to feel that you are master of your work and that you share the creative spirit; this is the wholesome philosophy of learning a trade."—Milton P. Higgins.

or windows back to scythes and hoes. At least six of the boys, as each one reached his later teens, went off to turn their mechanical bent into skill in the shops that were growing up in expanding industrial centers, and one of them learned the carpenter's trade in Standish.

Milton Prince Higgins, the ninth child, was born December 7, 1842. When, in 1860, he had finished high school in the neighboring town of Gorham, he went from Maine to Manchester, New Hampshire, and entered a three-year apprenticeship in the machine shops of the Amoskeag Manufacturing Company. Here in the same year two of his older brothers, already past their apprentice training elsewhere, came to work, and one of them, Freeman, remained as shop superintendent for nearly forty years.

The Amoskeag shops were a close adjunct of the textile company, but at that time their product was by no means limited to textile machinery, and the apprentices must have gained a varied experience in their work. Amoskeag ran its machine shops as a means of keeping itself alive through the difficulties which beset textile manufacturers during the Civil War. In 1861 the shops turned out twenty-four of the new steam fire engines that surrounding towns were ordering in emulation of Manchester's proud example, and large war orders for "Springfield rifled muskets" kept three hundred men employed.

For three years Milton Higgins worked there on apprentice wages, and during those years he acquired not only a thorough and all-round training as machinist, but also the ambition to go to college and the financial stake to start with. Since Amoskeag apprentices at this time were probably getting a daily stipend of 50 cents in their first year, 66⅔ cents in their second, and 83⅓ cents in their third, it was indeed a purposeful lad who managed to accumulate savings for future use. An older sister had held before him the ideal of education as a means of understanding and appreciation of whatever life might offer; the teachers at Gorham Academy, recognizing his caliber, had urged him to college, and at Manchester observation had shown him that a certain amount of advantage lay with the college-trained man. After another year of preparation, he entered Dartmouth College in the fall of 1864.

Whatever encouragement he may have received from others in this academic venture, it is certain that he earned his way inde-

pendently, chiefly by going back to Amoskeag to work in vacations. It is further certain that no poetic blandishments of the classical or professional traditions turned his mind from his practical aim; he studied physics, chemistry, and mathematics, and forged for himself a mechanical engineering training as these new hammers beat against the anvil of his machinist's knowledge.

Superintendent of the Washburn Shops

When Higgins had received his B. S. degree in 1868 and was ready to set out on a career, he was offering the world, perhaps quite unconsciously, an unusual talent. The technical school was then just hatching in the educational nest. Technical engineers were few in number, and fewer still were those who could serve well a fledgling institution which was to combine technical education on a collegiate level with practical training in a productive workshop. In Worcester, Massachusetts, the Worcester Polytechnic Institute was about to open its doors. One of its founders, Ichabod Washburn, who himself had climbed from apprentice to president of a large manufacturing concern, saw in Milton Higgins, an academically trained mechanic, the superintendent he wanted for the shop he was endowing in this "learn and work" school. Years proved his choice a canny one, for Higgins in the few months between his appointment and Washburn's death grasped the purpose of Washburn's plan—a practical, commercially operated machine shop as a laboratory for students of mechanical engineering —and adopted it wholeheartedly as the embodiment of his own idea of education as the acquisition of knowledge, plus skill. He worked to build up such an educational structure; he struggled to hold it against academic encroachment; and he drew from it the passion of his later years to put within the reach of every boy who wanted it the attainment of skill at a practical trade as part of the public education system.

When the Worcester project for technical education was started in 1865 under the sonorous name of Worcester County Free Institute of Industrial Science, the Rensselaer Polytechnic Institute had been operating for about forty years; Yale and Harvard also had well-established engineering courses. But the Massachusetts Institute of Technology was just getting under way, and other technical schools were springing up throughout the country under the impetus of the federal law of 1862 permitting the sale of

government lands in the West to subsidize education in "agriculture and the mechanic arts." In Worcester the school was the product of two ideas and two basic endowments. The gift of John Boynton, augmented by other substantial offerings, envisaged a course in mechanical and civil engineering, applied chemistry, and metallurgy; the gift of Ichabod Washburn was intended to found, in connection with that course, woodworking and machine shops operated on a commercial basis, where students as apprentices should acquire the manual skill with which to apply the technical knowledge they gained in the classrooms. It was this idea of commercial shop training which enflamed the imagination of Milton Higgins; and since a determination almost dogged in its forcefulness was intrinsic in him, he maintained commercial shops at the Institute through the twenty-five years of his superintendence in spite of friction and even open opposition from the more academic members of the board of trustees and faculty.

When Ichabod Washburn drew young Higgins to Worcester, the Washburn Shops were not yet finished. The Institute itself had not yet opened, and, indeed, the trustees were apparently not yet ready to commit themselves on the matter of a shop head. For the intervening months, Higgins worked as draftsman with Charles H. Morgan, the superintendent at the Washburn & Moen steel plant, Ichabod Washburn's own company. This association was fortunate, for Morgan became a trustee of the Institute and an active aid to Higgins in establishing and maintaining the Washburn Shops.

In December, 1868, Milton Higgins was officially appointed superintendent of the Washburn Shops at the Institute, and about two months later the Shops began operation with Milton Higgins instructing in the metal-room and his carpenter brother, Orlando M. Higgins, teaching in the woodworking shop. The students worked under the direction of carefully selected paid workmen who were producing goods for sale, just as apprentices had worked since time immemorial beside skilled journeymen to learn the right way of doing things. The three-year mechanical engineering course called for shopwork ten hours a week regularly and full working days during July. An additional preparatory apprenticeship term of five months was inaugurated in 1872 and continued until 1893, when all the courses were lengthened from three years to four.

One of the first problems in the new Shops was the selecting of products suitable to the instruction of student-apprentices and

at the same time marketable. The first classes in woodworking turned out adjustable drafting stands for engineers and drawing models for artists. There was an immediate and continuing demand for this equipment from schools of mechanical drawing, and it became a staple product of the shop for years. The machine shop soon began manufacturing lathes. In 1869 at the Baltimore Fair one of the shop's first lathes received a gold medal award, and in 1870 its engine lathes received the coveted first award at the exhibition of the American Institute in New York in recognition of the design and quality of workmanship in this new type of school shop.

In the quest for something to make which should not compete on the market with other Worcester manufactures, Morgan, who was on the shop committee, and Higgins soon turned to a mechanism they had themselves designed, a direct-plunger hydraulic elevator, and over a period of twenty-five years this became the most important shop product. Passenger elevators were just beginning to appear in stores and office buildings, an outgrowth of the platform elevators used in manufacturing plants for lifting heavy materials. Freight had been riding up and down for years while people still carried their own weight on stairways. At the Washburn & Moen plant in 1868, Charles Morgan had proposed, and Milton Higgins had designed and made drawings for, a "Direct Lift for a new form of annealing furnace and perhaps for other purposes." Here was a promising field for enterprise. Both freight and passenger elevators met a growing demand, and the Washburn Shops installations gave satisfaction. Higgins applied his mechanical genius to the improvement of the first design, and in 1876 he took out patents on valves to increase efficiency and impart a smoother control to the elevator car.

The plunger elevator operated on the simple principle of a piston, or plunger, moving up or down in a cylinder which was sunk in the ground to a depth equal to the height of the elevator's rise. Hydraulic pressure to move the plunger was applied through valves controlled by the person operating the car, which was attached directly to the top of the plunger. This type of elevator superseded the earlier steam-operated hoists because of greater speed, comfort, and simplicity of control, and it held its own for a time in competition with the later electric systems on the grounds of safety. Even after safety devices had reduced the element of

danger in electric elevators, public favor clung to the plunger type, comforted by the sight of a substantial column of steel rising or descending with the car and apparently supporting it, although in high-speed runs the weight of the load was actually carried by counterweights hung on heavy steel compensating cables which were attached to the car and ran over sheaves at the top of the shaft, as in other types of hoisting elevators.

Chiefly, although not exclusively, as a result of elevator manufacture, the gross annual business of the Washburn Shops grew from $1,500 in the fiscal year ending May 1, 1870, to $109,000 in the year ending May 1, 1896. The Shops, however, were not entirely self-supporting for a long period, and Higgins' aggressive management was under increasing fire from a group of the trustees who were critical of the commercial shop plan. According to Ichabod Washburn's original agreement, the superintendent was appointed by the trustees and removable by them, but he was given latitude in the making of contracts and supervision of the business. A certain amount of friction was inevitable from this dual control; it had, in fact, been present in the very origin of the plan. Investigations and complaints availed nothing on either side, and the shopwork expanded. In 1890, the treasurer's report urged that such an investment in one department was disproportionate. Both Higgins and George I. Alden, Professor of Mechanical Engineering, had assumed some outside manufacturing interests, and there was occasional caviling at their thus serving two masters, but again there was no drawn issue. Finally, with the Shops more than carrying their own expenses, the elevator business reached a magnitude which the opposing group feared would threaten the academic interests of the Institute. There were, furthermore, some murmurings beyond the campus about the sale of products from a tax-free shop in competition with private industry, and unfavorable publicity had arisen in a slight degree. In 1895, shortly after the coming of a new president to the Institute, the trustees voted, in response to his query, that the president's authority extended equally to all departments; and in January, 1896, the trustees voted to dispose of the elevator business including contracts, tools, and materials. This was the culmination of a long-felt cleavage. Thereupon, Higgins arranged to purchase the elevator business he had built up, and both he and Professor Alden resigned from the Institute.

In leaving the Worcester Polytechnic Institute, Higgins was bowing to a new administrative régime and a new policy, but he felt keenly this break with his twenty-six years of teaching. He had a strong interest in technical education and a real passion for the skill of trained hands. He saw beauty and creative power in the designing and making of machinery, and he had labored unceasingly to impart that spirit to his students. In spite of a diversity of demands, he is reputed to have been endlessly generous with his counsel and money so long as any student needed help. He had aided many students by personal loans on uncertain security and had served the demands of individual and educational interests. It was, of course, not possible for him lightly to relinquish so strong a connection. That he did so without bitterness is evidenced by his acceptance six years later of an appointment on the same board of trustees representing the State Board of Education. And he had too wry a Yankee sense of humor not to smile a bit when in that capacity he was asked to investigate and report to the board on possible ways of making the Washburn Shops again self-supporting!

When Higgins left the Institute, Worcester was definitely his home. He had married shortly after he had gone there, and two sons and two daughters had grown up in the big square house near the campus. His wife, who in the early years had helped her husband by writing letters and keeping the books of the Washburn Shops, was active in community affairs. Higgins was referred to as a pillar of the church in which he was a faithful member and Sunday School teacher, although his own interpretations were not always entirely acquiescent. In Worcester, he had grown fond of driving his horse smartly up and down the avenue in a day when the appearance of a similar equipage was a challenge to a friendly race. He liked to go off in the nearby woods after chestnuts with his boys and have a campfire meal. But his time for leisurely pursuits was limited, for he had undertaken business interests already giving promise of phenomenal growth. Worcester had been growing. It was a city of diverse industries, situated at the crossing of two natural routes of commerce and well served by railroads. It had been prosperous at the close of the Civil War and had expanded in the steel industry, in wire, in tools, and in textile machinery. Skilled craftsmen were gathering there, and the Worcester Polytechnic Institute

was turning into the community well-trained engineers and managers of enterprise. Milton Higgins had chosen a city well suited to his own ability to organize and to produce. From 1896 on, he gave concentrated attention to manufacturing.

To purchase the elevator business from the Washburn Shops and run it independently, Higgins formed the Worcester Plunger Elevator Company with himself as president and George Alden as treasurer. On land near his expanding Norton Company plant, he erected a new building and set up the old twenty-foot lathe along with other machines from the Washburn Shops. His son, John W. Higgins, just graduating from the Institute, was plant engineer and secretary. Plunger elevators continued to be designed and built in Worcester for New York, Washington, and western buildings to meet a growing demand for safe, high-speed passenger and freight service. Residences were fitted with one-story, single-passenger lifts and locomotive factories with ten-story lifts of eighty-ton capacity. About 1900 the new company successfully completed the installation in a New York hotel of sixteen high-speed elevators to run seventeen stories, which required cylinders and precision plungers sunk to a depth of two hundred twenty-three feet underground, with an electrical pumping plant. Perhaps it was this achievement that caught the attention of the Otis Elevator Company, newly formed by the amalgamation of several competing companies and looking for more advantageous acquisitions. Particularly of interest were the Higgins patent pilot valves, which controlled car speeds from six to six hundred feet per minute, and the Otis company pressed for a sale. Milton Higgins acceded, but not without regret. This elevator development had been so much the concern of his mechanical ingenuity. He had struggled over equipment for drilling straight deep shafts through ledge and quicksand and under tide water. He had sat in church listening to the minister intently and apparently taking notes on the sermon, while under his pencil grew little diagrams of gears and wheels, of valves and levers. Yet it seemed to him best to join the combination, since the larger corporation could better fit his plunger elevator into a market which would inevitably accept the electric passenger elevator system for sky scrapers as the problem of safety in operation was being solved.

Milton Higgins had, moreover, for some time been exerting influence as an administrator in other directions. Two large com-

panies, each the result of foresight and wise development, were to grow under his leadership, and the first of these was already an important factor in its field.

Industrial Administrator in Worcester

Milton Prince Higgins' first major industrial undertaking was the purchase of an abrasive wheel business which had started as a sideline to Frank B. Norton's pottery works, and the organization of the Norton Emery Wheel Company. Higgins was president, and his friend, Professor Alden, was treasurer. This incorporation obviously was based on interest in production rather than on financial exploitation, and this was true of Higgins' entire business career. To improve methods of production as well as to improve the product itself was always the challenge which roused his ability into constructive action. Finance and marketing he would leave to subordinates. He invested his savings, not primarily to bring himself the greatest returns, but to acquire and improve the tools of manufacture in a promising field. Just such a venture was the formation of the Norton Emery Wheel Company.

Some ten years earlier, Sven Pulson, an employee in Norton's pottery, was experimenting with emery wheels, attempting to make a clay binder for the emery grain and quartz crystals which could be baked in the potter's kiln to produce a solid grinding wheel. At that time, machinists were using natural stones to smooth up their work or making their own wheels by mixing emery with glue and letting it harden in a mold. Experience and luck in equal proportions combined to make some good wheels by this method, but a vitrified wheel with greater strength and the promise of some degree of standardization in quality was needed. By 1879 F. B. Norton's "stone-ware" works began to turn out such a wheel on a commercial basis. John Jeppson, a brother-in-law of Pulson's and also a potter, had come into the shop and was spending all his time molding emery wheels and vitrifying them in the pottery kiln. As the business grew, Walter L. Messer came to promote sales, and Charles L. Allen took charge of the bookkeeping. Before long, Norton wheels found their way to the Washburn Shops at Worcester Polytechnic Institute, and Higgins saw in them a product worthy to be something more than a potter's sideline.

When Higgins bought Norton out for $10,000, the grinding

of metal products was merely a finishing and polishing operation. No one had foreseen its efficacy in removal of metal; no one had conceived of the precision with which grinding machinery would be made to do its work—and many of the industries which were chiefly to utilize this development were themselves still non-existent or in a crude stage. Today, automobiles, aircraft, textile machinery, printing presses, typesetting machines, and the whole range of business machines, such as typewriters and calculators, depend upon grinding as essential in the fabrication of interchangeable parts. Car wheels and car axles for railroads are finished by grinding. As metallurgy has improved the alloys of industrial steel, the machine tools that fabricate steel have also been improved. From the early grinding wheel mounted on a lathe for polishing the hardened surface of cylindrical parts, there have been evolved a multitude of intricate grinders, not merely to smooth off, but to cut away to accurate dimensions the millions of interlocking, tightly fitting, swiftly moving parts of a modern, mechanized world. When Milton Higgins organized a company to make grinding wheels, in 1885, he was stepping into a field with scope for business acumen and mechanical genius of no mean order, just when new and growing industries were looking for efficient and economical means of precision manufacture.

For the first year, the Norton Emery Wheel Company continued operations in the Norton Pottery on Water Street in Worcester, a long, story-and-a-half building with the big cone-shaped vent of the kiln towering above the other chimneys. The next year, however, a new plant was built at Barber's Crossing, on the edge of Worcester, on land which Higgins purchased with a sagacious eye toward future industrial development at the junction of two railroads. The first building there, with two kilns, seemed larger than the business demanded, but renting space to other tenants soon gave way to building more room for the grinding wheels. By 1910, a long row of cones rose from the vitrifying plant, and buildings for other processes spread out on each side.

The company's products, too, had changed and multiplied in the meantime. Emery, a natural granular abrasive, was the first grit used for Norton wheels. In 1893 the company bought out the stock and goodwill of the Grant Corundum Wheel Manufacturing Company, of Chester, Massachusetts, and began putting out

grinding wheels of corundum, another natural abrasive, although the Chester plant was not continued in operation. A few years later corundum was imported from India and the so-called "India oil stone" for sharpening cutting edges by hand was added to the line of products. The chief emphasis in production, however, continued to be on wheels driven by power, and improved single-purpose machines for grinding tools and cutters demanded improved abrasives. Milton Higgins learned that in 1897 a laboratory experiment had succeeded in fusing bauxite ore to produce a synthetic corundum, later trade-marked "Alundum," which excelled for grinding hardened steel of high tensile strength. The possibilities of commercial production immediately became his concern, and in 1901 alundum began to appear in Norton products.

The manufacture of alundum presented difficulties because to melt bauxite a temperature of 3700° is required. Since steel melts at about 2800° and firebrick at that time could not stand up in heat much above 3100°, the problem of getting an electric furnace to contain the melting ore was not simple. In 1901, the new Norton alundum plant at Niagara Falls began operations with carbon-lined furnaces which were expensive and hazardous. Aldus C. Higgins, the older son of Milton, observing the action of the molten bauxite when streams of water were turned on these furnaces, as occasionally became necessary to reduce heat hazards, invented a furnace consisting of a water-cooled shell in which the electrically melted bauxite flowing out to the walls was chilled sufficiently to form a thin, solid lining with a higher melting point than the original ore. Workmen looked with suspicion on water-cooling, remembering explosive tendencies in the past, but this device was safe; and after Aldus Higgins himself and one of the superintendents had operated the new furnace successfully and unscathed, the employees fell to work enthusiastically, and management knew that alundum was here to stay. This furnace was patented in 1904, and after 1906 emery was not used in Norton wheels.

To keep abreast of its products, the company dropped its Emery Wheel title at this time and became simply the Norton Company. Some of its first leading spirits were still its prime movers. John Jeppson, the potter, was superintendent and Charles L. Allen, who had been F. B. Norton's office clerk, was secretary and general manager. These two men, with Milton P. Higgins

and George I. Alden, comprised a revamped board of directors, to which in 1906 George N. Jeppson and Aldus C. Higgins were added. Among the employees there were still men who had worked with Jeppson in the Water Street pottery. Skill and business sense were attracted and held by the vision and integrity of the elder Higgins. When Charles H. Norton (who had no connection with the Norton for whom the company was named) came to the Worcester plant, he already had had experience in the use of grinding machinery and was keenly interested in its future development.

The special machines which utilized the abrasive wheels had become so important that in 1900 Higgins organized another company to manufacture these machines under the name of the Norton Grinding Company. Its plant was adjacent to the abrasive buildings, served by the same railway sidings, and its financial control and management were almost identical with the earlier company's, although it was not until 1919 that the two were actually merged. Milton Higgins was president, Alden was treasurer and general manager, and the other directors were Charles L. Allen, Charles H. Norton, and John Jeppson.

The first product of this new corporation was the Norton Plain Machine for Cylindrical Grinding, which was the invention of Charles H. Norton. The first machine made was reported ten years later to be still running under heavy duty turning out parts for printing presses. Incidentally, it weighed 13,000 pounds.

The grinding of cylindrical parts required a machine which could hold the wheel "true" against the part to be ground so that no variation from required dimensions could occur. The perfection of such machinery has been a large contribution to the accuracy of machining, as men learned first to think in thousandths of an inch, and then in hundred-thousandths. Its second contribution has been in economy. At first cylindrical grinding was used only in cases where unusual refinement was necessary; then it came to be also a cutting operation which for many parts replaced machining on lathes. Saving this operation saved time and saved costs. The two Norton organizations were working together in this development of grinding: the one to make the best possible abrasive wheels for various purposes, and the other to design machinery best fitted to give the wheels their maximum efficiency.

Beyond the limits of Worcester, Norton enterprise was at work also. In 1910 the Norton Plant at Chippewa, Canada, began turning out still another type of abrasive, silicon-carbide, for the Worcester plant to form into wheels, and in that same year the Deutsche Norton Gesellschaft began producing grinding wheels at Wesseling, Germany, with twelve men from Worcester to guide its destiny and eighty-five other employees. This was only the beginning of foreign expansion which increased in Canada and extended to England, France, and Italy after the first World War.

As a corporation president, Milton Prince Higgins did not lose touch with the processes in the factory outside the white-collar precincts. To improve methods, to improve the mechanism of production, was to better the product or to lower the cost of producing it. His spare-moment doodling with sketches of machine parts revealed an interest not limited to elevator construction. He was granted a patent on a tool for dressing emery wheels and grindstones in 1888. In 1890 he patented a conveying system for continuous furnaces, an improvement on existing mechanisms. In 1896 his name was coupled with George I. Alden's in two patents, one on a machine for truing emery wheels and one on a method of mounting abrasive wheels. In these patents, as in those pertaining to elevators, there is no mark of tremendous original discovery; they are the work of an *improver*, of one who was alert to the better way of doing things, a skillful mechanic who could see beyond the means at hand to other means of greater efficiency. In this capacity as well as in his business management, Higgins was contributing greatly to the growth of American industry.

Another business with great potentiality for development was launched by Higgins in 1904 with the incorporation of the Worcester Pressed Steel Company, capitalized at $50,000. The purpose of this organization was to buy and develop another pioneer manufactory called the Worcester Ferrule Manufacturing Company in which John Woodman Higgins, the younger son, had become interested. This shop was cold-pressing steel bicycle frames and fittings by a patented process to meet the increasing demand for these parts and was also making steel and brass ferrules, ball bearings, stove trimmings, steam-pipe collars, and hardware. The new corporation was set up in the manner by this

time familiar, with Milton P. Higgins as president and George I. Alden as treasurer. John W. Higgins was general manager. He and his father owned equal shares of the stock; Alden held only a small block.

For about a year the business continued its downtown plant, chiefly specializing in bicycle and machine parts but with a forward glance toward the coming automobile industry. Then, in 1905, the Worcester Pressed Steel Company took its place at Barber's Crossing, on a thirty-acre plot on the Boston & Maine Railroad, near the Norton works and the Plunger Elevator factory. The latter at that time was in the hands of the Otis Elevator Company but continued operations for another year or two at the original plant. Around this manufacturing center there was gathering a group of skilled workers, many of them Swedish in origin, settling in permanent homes even before the present-day model village and company-sponsored community development had been begun. The steel company throve, a pioneer in new methods of autogenous welding, quick to develop its own continuous drawing processes and cold-rolling mills for precision strip steel. New buildings rose for expanding departments: in 1909, for annealing, case-hardening, and the founding of semi-steel castings; in 1910, for storage, shipping, and office space; in 1912, for pickling and heat treating; in 1913, a cold-rolling and shearing mill which was the most advanced of its kind. There was evidence here again of the Higgins creed that the best equipment and production facilities were the key to a good product.

The output of the Worcester Pressed Steel Company consisted entirely of producers' goods—materials and parts for further assembly—but it included a variety of large and small items for a wide range of users. As an outgrowth of the early business, for example, an improved pressed-steel cup for ball bearings used in automobiles, bicycles, and roller skates helped to keep all America in motion.

Milton Higgins withdrew from active participation in management of the Worcester Pressed Steel Company in 1910, and his son John became president in his place. The older man had for two years not been in full health and his physical condition had forced upon him a slower step and a less crowded daily schedule. Interest in new things and zeal in old principles had not flagged, however. In 1911, he sponsored as president the incorporation of

the Sanford Riley Stoker Company, which was to undertake the manufacture of an automatic stoker of which his son-in-law, R. Sanford Riley, was inventor and chief promoter. Before this company was fully under way, Milton Higgins died, on March 8, 1912, after only two weeks of illness, and the second generation was left in charge of the strong and still expanding productive enterprises which they had helped their father to build—enterprises important both in the life of the city of Worcester and in their respective wide-spread industrial markets. Aldus C. Higgins became the head of the Norton Company and the Norton Grinding Company, later consolidated under the first title; John W. Higgins carried on the Worcester Pressed Steel Company and its subsidiary units, which also finally merged completely into the parent company.

Promoter of the Trade-School Movement

Milton Prince Higgins' interests in his later years were not confined to business affairs; he still remained at heart an educator with a conviction of the value of mechanical training as an educational factor and character builder. With the same fervor that he had put into keeping the Washburn Shops on a practical basis, he now turned to fostering a movement to provide practical industrial education for pupils of high-school age. The Worcester Trade School was an early and successful experiment, owing largely to his efforts, and his emphatic discussion of the subject carried weight in places remote from that local project.

The Washburn Shops had achieved wide recognition by their commercial aspect and other schools had followed them as a model. In 1880 Milton Higgins had been the consultant in establishing shops at the Miller Manual Labor School in Virginia. When the Georgia School of Technology at Atlanta was being planned, both Higgins and Alden were called down to help organize the school, and both refused flattering offers of positions there. Higgins obtained from reluctant Worcester trustees leave of absence for the year 1888-89 to superintend the setting-up of the Atlanta shops and foundry for mechanical engineering students, and they were put on a successful commercial basis. His word, then, in regard to the teaching of trades was the well-considered word of experience, and he did not go unheeded when he began to urge that trades should be taught at a high-school level.

The apprentice system in industry was losing power; boys

taking jobs in specialized factories found small chance to learn anything beyond unskilled or semiskilled operations. Many boys left school after the grades because they foresaw no immediate prospect of enhanced earning power in a four-year academic high school. Other students went through high school and entered technical schools with the aspirations of a mechanical engineer but without the natural aptitude or ability for such a career, and these boys fell by the wayside as second-rate machinists because of a sense of failure and a lack of thorough training in mechanics. Upon such observations as these, Higgins built his case for the foundation of public trade schools where pupils would spend half of their time in shop practice and half in related academic classrooms. He argued further that, if a graduate wanted to continue with higher education, such a school was by no means a dead-end. Practically, the boy would have acquired means of earning for his own future education, and his mind would be as well trained and receptive as after regular school work. Higgins believed emphatically that a man had to be a thorough mechanic before he could be a well-trained engineer; he believed even more firmly that one grew to recognize truth and beauty as well through the exact, functional forms of mechanics as through classical subjects. Woven into the fabric of his thought on these points, we can see his own boyhood love of machines, his own experience as an industrious and interested apprentice, and the reflection of his own college course supplementing rather than supplanting his machinist's knowledge. His own words are illuminating:[2]

> There is good reason to believe that faithful devotion to the study of mechanics, mechanism, machine design, and similar work, leading to and including mechanical engineering, may prove to be the best possible lines of study for development of the highest and best mental qualities of men. Certainly no other line of human activity can so directly cultivate the creative powers of the human mind and develop the imagination. We hear of the artist's love of beauty. The mechanic may find beauty in a thousand places all through his work. He can be a designer and a sculptor in his own art. The scholar has a passion for truth. There is truth demanded and found everywhere in the realm of mechanics, and to find it and to be able to secure it is one object of the education of the mechanic.

Milton Higgins thus pronounced his *credo* before the American

[2]American Society of Mechanical Engineers, *Transactions*, vol. xxi, p. 677.

Society of Mechanical Engineers at their New York meeting in December, 1899. In this speech he pointed out that industry needed more skilled workers and, particularly, more foremen and superintendents. The gap between the unskilled workers and the top factory jobs was not being adequately bridged within industry itself. He outlined his plan for "half-time" schools concisely. First, such a school would include a first-class, commercially productive shop which should constitute a department coördinate in importance with the academic departments. The commercial aspect was essential to keep the shop from becoming merely a laboratory out of touch with the problems of actual operation. Expert mechanics, carefully selected, were to be employed, in a ratio of at least one to every five pupils, and also a blacksmith, a steam engineer, a pattern-maker, draftsmen, and a bookkeeper. Pupils would receive instruction and practice in this shop during half the working hours in five days a week for a four-year period; the other half of their working time would be spent in public-school instruction equivalent to a high-school course "restricted, abridged, and improved" to meet their needs. Pupils should be grammar-school graduates carefully selected for mechanical aptitude. The school management was to be responsible to trustees who were practical business men. Higgins did not hesitate in his discussion to bring into the open the old difficulty of getting shopmen and professional educators to coöperate, and he put the burden of compromise perhaps more heavily on the educators.

This speech evoked serious discussion which ran to eighty-two pages of the Society's *Transactions,* and it was regarded as important enough to be the subject for further lengthy consideration, led by Higgins, at the meeting in Cincinnati the following May. Higgins had brought his scheme successfully into the center of attention of professional and business men. He was elected vice-president of the Society in 1902, and as he became well known in scientific circles, so did his views.

Much of the reaction to this first speech was favorable, much was skeptical, and some was actually in opposition. The practicability of selling school-made goods in the open market was naturally one of the debated points. Resentment of tax-free competition on the part of industry was feared, although at this time prison goods were being legally sold. The possibility of obtaining

first-class men to superintend such projects in the face of larger earnings elsewhere and the expense of keeping equipment up to date were queried. Higgins' reply was characteristic: high salaries should be paid and expense for machinery should not be spared. "Nothing is too good for a boy."

Higgins felt that such schools should be carried on within the public education system since the need of such pupils was as great as the need for college preparatory work, but he saw that public opinion was slow. So much that is commonly accepted concerning industrial education now was new then. Private associations might, he thought, sponsor or help endow these "half-time" schools. In April, 1901, he wrote in the newly launched *Worcester Magazine* a plea addressed to the Worcester County Mechanics Association urging the benefits which such a half-time trade school would bring to the youth and the industrialists of Worcester. From that time on, he did not let the matter rest until public interest brought local fruition to his wish.

The trade schools of Europe had been established earlier, but with the purpose of supplementing practical experience at a higher technical level rather than to teach the rudiments of machine operation, and they could not serve as models in the American situation.

During the first decade of the century, the idea of trade schools as an introduction to industry was catching on in educational circles in this country, and finally political action began. Here in Massachusetts the Douglas Commission reported on vocational education to the governor in 1906 in terms which tallied with many of Higgins' tenets. Vocational training should begin at fourteen years of age; it should give a pupil academic work closely related to his specific trade; vocational schools should be permitted to grow independently of existing school traditions, following the traditions of industry. This report called for the appointment of a Commission on Industrial Education to work for three years investigating and planning for vocational schools in the State. Milton Higgins was a member of this Commission, which established sixteen evening schools and four day schools before its term expired and its work was taken over by the Massachusetts Board of Education. Among schools in process of establishment at that time was the Worcester Trade School for Boys.

Civic organizations in Worcester and many influential citizens had joined in petitions for the appointment of a committee on industrial education, which had been headed by Higgins in 1907. After thorough investigation of needs and possibilities in collaboration with the State Commission, the Worcester committee made definite recommendations for a school, to be conducted with shops and classrooms in one building, to teach boys over fourteen the machinist's trade, "including such instruction and practice in drafting, pattern making, tool making, die sinking, iron moulding and blacksmithing as are required in connection with a thorough training of a competent, intelligent, all-around machinist." In December, 1908, a city ordinance gave effect to the report of this committee by establishing a board of trustees, with Higgins as president, to select a site and arrange for buildings and equipment, and to carry on the management of the school after its construction. On February 9, 1910, the first group of fifty-two boys started their course of training.

The school was financed by the city with State aid. The academic work was not carried on within the regular high schools, as had been Higgins' earlier idea, but was conducted in close connection with the shopwork under the management of the trade school. As Higgins had gone more specifically into the investigation and planning of trade education with the State and local commissions, he had come to think that this degree of greater independence was advantageous.

The Worcester school flourished. An account of it in 1914 credits it with four hundred pupils and a larger number of older boys in evening classes. The product of the shop was to some extent absorbed by local machinery manufacturers who furnished the school with pieces of equipment and were paid in kind by machine parts, such as gears and shafts, which the boys made to their order.

In the entrance hall of this school, which embodies so much of his philosophy, is the bronze tablet dedicated to Milton Prince Higgins as "mechanic, manufacturer, educator." Through each of these attributes he had influenced a growing industrial world—by helping it to grow and to adjust itself to the result of its own development. He had been among those who adapted machines to the expanding need of industry; he had seen how to utilize and

manage the new power a machine age was offering; he had understood the needs of workers and managers and had furthered a mode of education to fulfill the requirements of both.

JOSEPHA M. PERRY,
Harvard University.

Scholars Get Access to Burlington Records

By R. C. OVERTON*

[Editor's Note: Reprinted from the *Railway Age* of February 26, 1944, with the permission of the author and the publication.]

In July, 1936, the Burlington inaugurated a policy of making its historical records available to qualified scholars by depositing, in the Baker Library at the Harvard Graduate School of Business Administration, all the records that could be found (some six tons in bulk) pertaining to the sale and colonization of its land grants in Iowa and Nebraska; a few years later similar material for the Hannibal & St. Joseph was added to this collection, thereby making it the most complete of its kind in the United States. In April, 1943, this program of deposit was broadened when the company decided to place in the Newberry Library at Chicago some ten tons of general office files for the years 1850-1887. This vast amount of material includes the correspondence of the men who founded, built, and directed the road in its early years, records relating to every phase of the company's activities, and many items of local and biographical interest.

RECORDS UNUSUALLY COMPLETE

As summarized by President Ralph Budd on the occasion of this latest deposit, the Burlington has followed this policy because "we believe that these records will provide enlightening and, in

*Superintendent, Relief Department, C. B. & Q.

many instances, new commentaries on the economic beginnings of the country, as well as on the social customs, the level of technological knowledge, and the business strategy of those early days." Thus, for the first time on a large scale, students of the West and particularly of its economic and social growth, have had and will have an opportunity to reconstruct and interpret the policies and practices of the past that have determined the development of a major railway system and the territory that it serves. One full-length volume, based on the land grant materials and written at Harvard, has already been published;† others are in various stages of progress.‡

Since the Burlington has never undergone reorganization, its records are exceptionally complete and have unusual continuity. From the standpoint of the historian, they offer a fruitful field of study. The company's first link, put into operation on September 2, 1850, was the second railroad to serve Chicago. Pushing steadily westward, the road reached the Mississippi in 1855, and the Missouri River at St. Joseph in 1859, and at Omaha in 1870. It entered Denver in 1882, the Twin Cities in 1886, and Billings, Montana, in 1894. As the rails advanced, the Burlington not only brought the first effective means of transportation to much of this region, but also took an active part in its settlement. Although, as indicated above, one book has already appeared, based on the colonization records, the papers at Harvard still contain much unworked material concerning immigration, genealogy, agricultural experiments, and the like.

As a "Granger road," the Burlington participated in the intensive development of the principal corn and wheat-growing areas of the nation. It brought in new crops (such as alfalfa); encouraged scientific farming, reforestation, and improved cattle breeding; and worked out new methods for the transportation of livestock and perishable traffic. The road was an important factor in the rate-making and regulatory developments of the time, and played its part in the mergers and "grand strategy" typical of the early days. In the realm of finance, the company received

†"Burlington West—a Colonization History of the Burlington Railroad," by R. C. Overton, Harvard University Press, 1941.

‡A study of the Hannibal & St. Joseph by Howard Bennett, Harvard; a study of the Chicago, Burlington & Northern by John Hobart. Both Messrs. Bennett and Hobart are now serving in the armed forces.

its original backing in Boston and thus typified the early migration of eastern capital to the West; its unusually complete records reveal the consistently conservative "New England" policies that have enabled it to survive depressions, disasters, and wars without a default. In the field of technological development, the Burlington was an early user of steel rails and vestibule cars, among other things, and conducted the famous Westinghouse brake tests in 1886 that led to the perfection of the modern air brake.

Other Facilities for Scholars

These developments, to mention only a few, are amply documented in the records now being made accessible in the Newberry Library. In addition, the company makes available to qualified research men, at its secretary's office in Chicago, the original manuscript corporate records of the early companies (some 215 in number) which now form part of the unified 11,000-mile system, as well as printed reports and such early statistical and mechanical information as can be obtained.

Because of the current manpower shortage, the historical and archival activities of the Burlington have of course been subordinated to the necessities of the war. When peace returns, however, the company expects to continue its program in an effort to facilitate a series of studies revealing not only the development of this particular railroad, but also the growth of the territory it serves.

A New Business History Series

A book has recently appeared which is evidently the first volume of The Growth of Business Series to be published by the Columbia University Press. The book, *Camillus* by Alfred Lief, is concerned with a petty capitalist firm. It outlines the career of an immigrant, Adolph Kastor, who first worked as a clerk in a hard-

ware store in New York, later engaged in importing cutlery from England and Germany, and finally, because of the rising import tariff, turned to the manufacture of cutlery, especially pocket knives, in the town of Camillus, New York. The book really begins with the third development, the establishment of the cutlery factory in 1902.

The book is very readable and is strikingly illustrated. It sets forth clearly some of the production problems which the firm encountered and solved. By means of concentration on few problems, the simplification of processes, and general mass production, the firm was able to grow and prosper. The book has a good deal to say about production, but little about distribution and finance; thus it fails to give a rounded story of the firm's business. Moreover, it does not relate the history of the company to the general history of business in its time.

There is a particular need of small, effectively written books on business history. This book does not, however, promise well for The Growth of Business Series. It is to be hoped that later volumes will combine the effective style which characterizes *Camillus* with a more rounded and meaningful presentation of the business. To produce small volumes in business history which combine good form and readability with a general presentation of business founded on substantial research and insight would be a notable achievement.

Early Manufacturing in Oregon

If the whole history of American experience in establishing and operating manufacturing ventures were recorded, the number of failures would probably be found to be prodigious. Countless communities on rivers, large and small, dreamed of the time when the hum and whir of machines would bring them wealth, and many such communities actually set up factories. Many ventures suc-

ceeded, but probably even more did not. Failures were, however, not all loss — they provided the difficult school in which petty capitalists learned how to use the new machines and how to administer the business of machine manufacture with its problems of finance, management of machines and men, and marketing.

To write the complete history of that experience is difficult since few records were left by the concerns which failed. Professor Lomax, of the University of Oregon, has written a book entitled *Pioneer Woolen Mills in Oregon*[1] which gives significant illustrations of pioneer efforts in manufacture. The book also illustrates the difficulty of resurrecting their history, for in Oregon the primary records of woolen companies seem to have shared the fate of the buildings in which they were kept, to have been destroyed by fire. Professor Lomax, in addition to his use of newspaper accounts, has been fortunate in that he could draw upon the recollections of a few surviving pioneers and upon their descendants. Lacking the actual business records of these early concerns, he has been unable to tell a full story of actual operation and management.

The first third of the book tells of the various attempts from 1811 to 1875 to introduce flocks of sheep and wool-growing in Oregon, while the larger part deals with the struggles of communities to start their own woolen mills from 1856 to 1875. These pioneer mills were established and administered by local men and were dependent on the local communities for capital, raw materials, and a market. Machinery and men to supervise manufacture were brought in from the outside, for example in the case of the first woolen mill, the Willamette Woolen Manufacturing Company, from New England. In 1881 only four remained of about a dozen attempts to establish woolen mills. For these and others which have been started since the pioneer days we hope that more records are available so that a detailed analysis of operations can be written.

Evelyn H. Knowlton,
Harvard University.

[1]Alfred L. Lomax, *Pioneer Woolen Mills in Oregon: History of Wool and the Woolen Textile Industry in Oregon, 1811-1875.* Portland, Oregon: Binfords & Mort, 1941. Pp. 312.

New York City Business Records: A Plan for Their Preservation[1]

The New York Metropolitan area contains a greater volume of important business records than any similar section of the United States; yet up to some three years ago little had been done by the historical profession to encourage the preservation of the records for scholarly use. Some New York business records have been deposited from time to time in the local university libraries, the New York Historical Society, the Museum of the City of New York, and the Public Library, where the former Director, H. M. Lydenberg, made occasional efforts in this direction. Through members of the Business Historical Society, and others, the attention of the Baker Library had sometimes been directed to New York records; but all of these efforts together have barely ruffled the surface of the vast mass of papers reposing in vaults, private libraries, and storage warehouses.

Surveying the situation early in 1941 Professor Shepard B. Clough of Columbia University decided that the existing depositories in the area could never hope to house more than a small part of the mighty records of New York business, and that the true solution was to prevail upon business firms to care for the records themselves in a way that would make them accessible to properly qualified scholars. To pursue this policy, or any other that might develop as time went on, he led the way in the formation of the New York Committee on Business Records. The Committee is composed of several prominent New York business men,

[1]Editor's Note: In keeping with the policy of the BULLETIN to publish information about what is being done throughout the country in the preservation of business records, the editor asked Professor Cochran to inform us of the activities of a local committee in New York City.

the Director of the New York Public Library, the Deans and Librarians of the Business Schools of Columbia and New York University, the Librarian of the Baker Library at Harvard, and some professors of economic history.

The Committee is by no means alone in its efforts to impress upon New York business men the importance of systematic record preservation. A number of commercial services are endeavoring to sell "systems" and equipment for the same purpose, and many of the large companies already have elaborate systems of their own. The difficulty in almost all of these cases, however, is that the emphasis is on current or relatively recent records, and those over twenty or thirty years old, if not cremated, are stored indiscriminately in warehouses from which they can be recovered only at considerable expense. This means that in practice such records are available neither to scholars nor to officers of the company. In some instances nobody in the company is even sure what is in the warehouse or how any particular item could be found. The aim of the New York Committee is to prevent this indiscriminate dumping in the future, and to prevail upon business companies to introduce systematic methods for condensing, abstracting, and cataloguing such records as they possess with a view to making them available to both competent scholars and officers of the particular companies. The Committee's limited experience so far would indicate that some companies, particularly smaller ones, would sooner deposit the old records with a suitable institution than go to the expense and trouble of putting them in order. In such cases the Committee tries to find the most satisfactory and logical depository. The first step, however, in any case has to be to persuade the management of the importance of business history. For this purpose the recent articles of Henrietta Larson and Stanley Pargellis are already proving to be of value.

The Committee is developing several solutions to the problems of business record preservation, and it makes varying suggestions depending upon the interest of the executives involved. The ideal solution is to have the company appoint a full-time historian or archivist, as suggested in the article, "Send Me a Business Historian" in the BULLETIN OF THE BUSINESS HISTORICAL SOCIETY, volume xvii, number 2 (April, 1943), or in Professor Ralph M. Hower's booklet on *The Preservation of Business Records*, issued by the Business Historical Society in 1940. The Committee is

planning this next winter to attempt the training of business archivists through coöperation with the New York University Graduate School of Business Administration and possibly some of the city's libraries. The archivist or company historian should be a person in whom the company will be willing to vest considerable authority and to trust with confidential information. When he has established his system, and demonstrated his discretion in handling company records, the records should be made available to scholars on some basis that will permit objective research. To win executive agreement to so broad a program will be difficult in many cases; much educational work is necessary before business men as a whole will recognize the value *to them* of objective business history. As a first step the Committee is preparing a brief pamphlet on the value of business history to management.

If a specific company cannot be won over to the ideal program, the Committee will coöperate with it on any practical basis. If it already has its records in such condition that they can be used and is willing to admit scholars, the Committee asks permission to make the fact known to scholars. Even if the company will not permit any use of its records, but has them carefully preserved for its own purposes, the Committee wishes to take note of the existence of such a collection so that proper steps can be taken to make the records available at some future time.

Because of the large number of business firms in the Metropolitan area, the Committee is concentrating at first on trying to reach a representative cross-section of the different lines of business. This imposes difficult problems in selection, and in trying to establish the proper contacts. In general a company must be approached through one of its important executive officers if anything is to be accomplished, and this means proceeding through mutual friends in a slowly broadening circle. Another possible approach which the Committee intends to try in the near future is through the librarians of the many companies that maintain private libraries.

Owing largely to the war, the Committee has so far accomplished only a small part of its initial tasks. Every member has been fully occupied with other duties, and the usual help from interested graduate students has not been available. Enough progress has been made, however, to demonstrate the soundness of Professor Clough's idea and to leave little doubt that much more

can be accomplished as soon as time permits. Three important companies stand ready to receive applications from scholars for the use of their records which are preserved in good order. Another has had its records surveyed by a member of the Committee and will presumably preserve the material recommended in the resulting report. Several other large and medium-sized institutions are being negotiated with at the present time regarding either the deposit of their older records or the opening of company-held records to the use of scholars. When the work of the Committee has progressed a little further it will publish a list of company records that are being preserved in various ways, with statements concerning the conditions under which the individual collections may be used.

The Committee hopes that its efforts in New York City may be duplicated in other business centers and that eventually there may come to be a nation-wide group of similar organizations for the preservation of business records. Meanwhile, the New York Committee is anxious to receive information regarding companies that might be interested in its work or suggestions for improving its methods of procedure.

THOMAS C. COCHRAN,
New York University.

Another View of the Historian's Treatment of Business

The attention of the readers of the BULLETIN was in the April issue directed to an address by Dr. Stanley Pargellis on the subject, "The Judgment of History on American Business." The address, which was published by the Newcomen Society, American Branch, and also by the *Railway Age* and *The Nation's Business*,[1] has evoked much stimulating discussion. A letter is printed below that comments on Dr. Pargellis' address and carries the discussion

[1] *Railway Age*, February 26, 1944; *The Nation's Business*, May, 1944.

further. It emphasizes a fundamental aspect of the problem, and in effect it challenges the scholar to an examination of his own thinking about business. The BULLETIN presents the letter as the statement of a business man who has thought much about the problem.

For those who have not read Dr. Pargellis' address, the following points from his argument are offered. (1) "What men believe about the past," held Dr. Pargellis, "influences their actions in the present;" they act on underlying assumptions and convictions that "are both inherited from the past and reinforced by men's understanding and interpretation of the past." (2) American historians, he said, have been creating a conviction about business in the minds of readers which he divides into four "ingredients," as follows:

> Business today, as for the last 75 years, is guided by but one motive, which is not, save indirectly, the public welfare; business exercises now, as it did then, a disproportionate and sinister influence on courts and government officials; business is still wasteful, immoral, corrupt, vicious and scheming, and the common man needs protection against it; business must therefore be compelled by political action to change its ways or it will stand, as it has always stood, in the path of the plain people.

(3) He maintained that historians have been "grossly one-sided in their judgment" of business because they have told the story as they found it in the records available to them, which have not included the records of business. (4) Holding that an accurate report of the facts of the history of business and balanced judgments about it could be obtained only if business records were used by historians, Dr. Pargellis proposed that corporation executives seriously consider making available for historical research "documents in their possession which are no longer alive." He suggested that those records be presented to, or deposited in, responsible libraries where qualified historians would be permitted to use them.

The letter, which was written to the editor of *The Nation's Business* by a vice-president of J. P. Morgan & Company, Incorporated, follows:

Lawrence F. Hurley, Esq., Editor,
Nation's Business,
420 Lexington Avenue, May 2, 1944
New York City

Dear Mr. Hurley:

Your letter of April 18 and the foundry proof of Dr. Pargellis's article interested me, and I see that you solicit my comments.

In your opening sentence you ask what we should do if Allan Nevins, James Truslow Adams, or Charles A. Beard should ask to examine the records of J. P. Morgan & Co. The history of our bank since the day it started in business, back in 1860 or 1861, is the history of its clients' affairs, and it is of the very essence of a private banker's business to treat his relations with his clients as confidential and his clients' affairs as confidential. Any historian who wishes to know about the affairs of the Governments and corporations that are our clients should address himself to the principals and not their bankers.

The problem that Dr. Pargellis discusses has given many of us concern. His suggestion seems to me to have some merit as a long-term (*very* long-term) influence. I hope he will win an encouraging response from business men everywhere.

We must keep in mind that the Pargellis approach is not new. For years Harvard has been tilling this very field—soliciting the deposit of business files, with some success, and studying them. The Harvard University Press has been turning out volume after volume giving the histories of particular businesses. Only a few weeks ago I received *The Whitesmiths of Taunton*, by George Sweet Gibb. Earlier volumes dealt with N. W. Ayer & Son, the First National Bank of Boston, R. H. Macy & Co., and others. This work is under the able direction of N. S. B. Gras, who holds the Straus Chair of Business History, and a number of associates, of whom Henrietta M. Larson, author of *Jay Cooke, Private Banker*, is known to me as especially capable. The books are well written and intelligent, and well made. Their influence is all to the good. But my impression is that these Harvard volumes are little read, and their influence, while beneficial, has been small. It is good to know that Dr. Pargellis, working out of Chicago, will parallel Harvard's efforts, but we must not delude ourselves into expecting too much from these sound endeavors.

In addition to the systematic work of Professor Gras, of course we also have the independent undertakings of excellent men like Allan Nevins, whose biographies of Rockefeller and Abram Hewitt are enduring additions to our understanding of those men and their times.

Dr. Pargellis makes known that two railroads have recently deposited their 19th century central office papers in the Newberry Library. A revision of 19th century business history would be a good thing, but it may be doubted whether painstaking studies in that field will alter the general impression of those times that, rightly or wrongly, has long prevailed. What is important is that the public should have a fuller and more truthful picture of business *today*. But corporations will not throw open contemporary or recent files, because our business world is competitive in instinct and practice; and also because in some areas, such as law and banking (as I mentioned at the outset), the relations with clients are and should be confidential. What is more, this confidential aspect has no expiry date, and a banker or a lawyer is never free (unless under subpoena or on instructions from the client) to surrender the details of his clients' affairs.

There is another factor, often overlooked. It is a mistake to think the files necessarily give the truth about a business. Files are often misleading. Files supply the final documents that result from business discussions. Files are replete with the routine papers recording purchases and sales and the movement of goods or money. But matters of policy are threshed out in meetings, on the 'phone, in talks face to face. The interplay of thinking that leads to business decisions and a deal gets into the files occasionally, in a letter or memorandum. But often it does not, and often such stray memoranda or letters as do get into the files are accidental and misleading. There is nothing either new or sinister about this. Where men are planning the creation of goods and the sale and purchase of goods—when business is quick with life and possibilities—they are intent on getting things done, and the needs of business historians do not exist for them. It has always been thus, from ancient times down, and must always be so.

Dr. Pargellis lists four appalling conceptions about business that he finds rooted in American thinking. Perhaps he exaggerates the extent of their acceptance, but that they exist I fear is undeniable. Does he really believe that opening up 19th century business files to business historians will change these conceptions? If this is all we can hope for, the outlook is hopeless.

I would venture to suggest that the way out lies elsewhere. Dr. Pargellis asks why "well-trained and honest historians" are "so grossly one-sided in their judgment" and says the answer is

"ridiculously simple:" "These men have told their story as they have because that is the only story which the documents available to them let them tell." I think Dr. Pargellis is in error here. I suggest that the "historians" whose writings have shaped American popular opinion on these subjects have not deserved that exalted title of "historian;" *for the most part*, they have been journalists or crusaders. They have not explored the available documents, nor handled them carefully. They have relied heavily on contemporary newspaper and magazine clippings, which usually were written without full knowledge and often with a tendentious purpose. There is a wealth of material presenting the other side of the story that popular writers have chosen to ignore or distort. Whether the public would have an appetite for the less salty truth, I doubt.

Dr. Pargellis cites a source book edited by Professor Commager, in which he says that not a single document gives "the attitudes, the arguments, the economic and political philosophy of business men." But Professor Commager, who of course is a distinguished scholar and not a journalist or crusader, could have included such documents. Why didn't he? Here is one example. Dr. Pargellis points out that the Commager volume quotes the Pujo committee on monopoly. In reply to the Pujo committee's contentions, the Morgan firm published a letter to the committee that was a strong and notable document. It received wide publicity at the time, being published in full in some newspapers. The Pujo committee excluded it from their printed record. This exclusion has made it less accessible to students, of course. Is it too much to ask that scholars dig it up and present it? The fact of its exclusion is itself historically significant.

Professor Commager, as I said, is a distinguished and competent historian. When we come to the writers who have been most influential in shaping public opinion about business, such as the late Gustavus Myers and "Lewis Corey," they do not meet Dr. Pargellis's description of "well-trained and honest historians" at all. But they have exerted wide influence. The trouble is that almost no one checks up on their numerous footnote references, and reviewers treat them with respect, knowing no better. (A multitude of footnotes is a successful device for impressing the unwary reader.)

This brings me to my conclusion that the responsibility for

popular misunderstandings of business standards and achievements lies squarely on the door-step of our social philosophers, our historical faculties, our contemporary commentators. Ample materials are available for presenting the "attitudes" and philosophy of business men, but it is incumbent on our students to dig them up, and not to content themselves with the flashy utterances of loud-mouthed critics.

One often hears criticism of business men for not making out a better case for themselves. This criticism is unfair. Business men can't be expected to be social philosophers and intellectuals. The qualities that make a man good at business will seldom be found in thinkers and intellectuals. We must expect business men to be bad at articulating the justification for their activities and conduct. If it is true that political freedom and personal enterprise are complementary attributes of the world that we want to live in, it is the duty of our leaders of thought to buckle down and teach this doctrine, and illustrate it from the documentation that, as I believe, fully supports it. They should not allow themselves to be distracted and beguiled by the manoeuvres and bias of investigatory bodies and crusading journalists. In a free world we have a right to demand that business men be good as business men, not that they also discharge the function of spokesmen for our social order. We must ask that they create wealth, and make two blades of grass grow where one grew before. They've done that. By works are they justified.

Over the last fifteen years I have had an opportunity to follow from the inside a number of phases of business history that have drawn nation-wide attention, and occasioned controversy. As to these situations I would not agree with Dr. Pargellis that the story told by contemporary historians, even some of those with a serious reputation (such as Professor Beard), has been the only one possible from the documents available. On the contrary, the contemporary historians, even some serious ones, have often ignored much of the record, and misinterpreted much.

Some years ago the TNEC published a prodigious record of testimony and monographs on our social system. That record over large areas seemed to many of us vitiated by bad statistical procedures and false premises; in short, a determination to arrive at predetermined conclusions by a biased selection of evidence. In various quarters the TNEC material has been carefully analyzed

with damaging effect. But the official TNEC record, in every important library, is more accessible than these other unofficial sources, and there is danger that the professors of the future will rely on the story it tells, rather than dig deep in remote files for the solid material controverting the TNEC.

To revert for a moment to Dr. Pargellis's four-point statement of the ordinary man's conception of business, surely it ought not to be hard for our intellectuals to learn and teach that business men, in their human instincts, differ in no wise from workers or farmers or doctors or professors. There is the same mixture of worthy and unworthy elements, the same unaccountable differences between individuals, the same inconsistencies in conduct. The first three of Dr. Pargellis's "ingredients," while I do not challenge his choice, are a reflection, not so much on business men, as on the naïveté of the citizens who accept them, and on the wretched job done by our leaders of thought, including educators, who permit these over-simplifications to win currency. One is reminded of the book by the Frenchman Benda—*La Trahison des Clercs*—in which he contends that our world has been let down by its intellectual leaders, who have betrayed the trust that they took upon themselves as custodians of Western culture and intellectual integrity.

Perhaps it is true that many consider business to be guided by "one motive, which is not, save indirectly, the public welfare." But what an indictment of the ordinary man, of the schools in which he got his ignorance, and of the leaders to whom he listens! No man's motives are single. And men in all walks of life display selfishness and lust for power. Of course there is selfishness in business, and appetite for power. There is also pride in a job well done. Sinister influences and greed could never have waved the wand and brought into existence our modern industrial plants and the breath-taking products that they create. That is self-evident. Men with dreams and ability and the force of character to make dreams come true did that. If our educators and philosophers will take firm hold of that conspicuous fact, and preach it up hill and down dale, in season and out, our children's children may live in a Land of Promise where the promises are being kept.

Sincerely yours,

R. Gordon Wasson

Charles Copeland

1867 - 1944

Charles Copeland, a member of the Business Historical Society, died on the third day of February, 1944. He was born on March 30, 1867, in Englewood, New Jersey, the son of Charles Frederick and Sophie Ellen Walker Copeland.

A graduate of the Roxbury Latin School and of Harvard College, Charles Copeland began his business career in 1889 with the Wilmington & Northern Railroad. Ten years later he became assistant to the president of the Laflin & Rand Powder Co., and eventually treasurer of the Eastern Dynamite and Lake Superior Powder Co.

In 1903 he entered Du Pont's as assistant treasurer of the old E. I. du Pont de Nemours Powder Co. When the company was reorganized as E. I. du Pont de Nemours, Inc., in 1915, Copeland became assistant treasurer. In 1921 he was made director and secretary of the company, succeeding Alex I. du Pont, which position he held until 1932. From that date until 1942 he served as a director of the company. His son, Lammot du Pont Copeland, is now a director and also a member of the finance committee.

Charles Copeland typifies a group of business executives who, although they hold key positions within firms and are also prominent in the industry, are not well known to the general public. They constitute a kind of private business bureaucracy without which business could not possibly operate. Not infrequently, as in the case of Charles Copeland, who married Luisa d'Anbelot du Pont, they marry daughters of leading business men with whom they are associated. This is one way in which business families maintain their strength, a more important factor in sustaining a strong American business leadership than is generally recognized.

Secretary's Column

The Society gratefully acknowledges the following periodicals, which were received regularly during 1943 and have not yet been listed in the BULLETIN:

From American Association for State and Local History, Washington, D. C.: *Bulletin;* also, *State and Local History News.*

From American Management Association, New York City: *Management Review; Packaging Series* nos. 5-7; *Personnel Series,* nos. 63-67; *Insurance Series,* nos. 48-53; *Production Series,* nos. 139-146; *Management News,* vol. 16, nos. 3-8; *Personnel; Special Research Reports,* no. 1; *Management Index.*

From American Petroleum Institute, New York City: *Quarterly.*

From Chicago Historical Society, Chicago: *News Review.*

From Homer & Co, Inc., New York City: *Bond Bulletin.*

From State Historical Society of Missouri, Columbia: *Missouri Historical Review.*

From National Provisioner, Chicago: *National Provisioner.*

From Society for the Preservation of New England Antiquities, Boston: *Old-Time New England.*

From Oregon Historical Society, Portland: *Oregon Historical Quarterly.*

From University of Oregon, Eugene: *Oregon Business Review.*

From University of Washington, Seattle: *Pacific Northwest Quarterly.*

From Historical Society of Western Pennsylvania, Pittsburgh: *Western Pennsylvania Historical Magazine.*

From Rhode Island Historical Society: *Rhode Island History.*

From Southern Pine Association, New Orleans: *Weekly Trade Barometer and Supplement.*

From Tanners' Council of America, New York City: *Production Reports.*

From Texas State Historical Association, Austin: *Southwestern Historical Quarterly.*

From William and Mary College, Williamsburg, Virginia: *William and Mary College Quarterly.*

From State Department of History, Cheyenne, Wyoming: *Wyoming Annals.*

FOREIGN

From Manufacturers Publishing Co., Ltd., Sydney, Australia: *Australasian Manufacturer.*

From Royal Bank of Canada, Montreal: *Monthly Report.*

From Archivo General del Gobierno, Guatemala, Central America: *Boletin.*

From Banco Central de Chile, Santiago: *Boletin Mensual.*

From Nottingham Chamber of Commerce, Inc., Nottingham, England: *Journal.*

From Royal Economic Society, London: *Economic Journal.*

From Institute of Bankers in Ireland, Dublin: *Journal.*

From Departamento Autonomo de Prensa y Publicidad, Mexico City: *Revista de Estadistica.*

From Secretario General de la Comision de Planificacion Económica, Mexico City: *Planificacion Económica.*